

RL53 DATA VERIFICATION SUMMARY REPORT
for
samples collected from
CAMP STANLEY STORAGE ACTIVITY
BOERNE, TEXAS

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INTRODUCTION

The following data verification summary report covers environmental soil samples and associated field quality control (QC) sample collected from the Camp Stanley Site (under RL53) on August 22, 2000. The samples in the following laboratory Sample Delivery Group (SDG) were analyzed for volatile organic compounds (VOCs); TCLP VOCs; and TCLP metals including barium, beryllium, chromium, copper, nickel, zinc, tin, selenium, and silver:

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Field quality control samples collected was trip blank. The trip blank was analyzed for volatile organics only. Parsons ES did not collect any ambient samples for VOC analysis due to the lack of determined source from the site.

All samples were collected by Parsons Engineering Science (Parsons ES). All analyses were performed by APPL Laboratories, Inc. following procedures outlined in the AFCEE QAPP, version 3.0.

EVALUATION CRITERIA

The data submitted by the laboratory has been reviewed and verified following the guidelines outlined in the AFCEE QAPP, version 3.0. Information reviewed in the data packages include sample results; the summary of laboratory quality control results; case narrative; raw data; and chain-of-custody forms. The analyses and findings presented in this report are based on the reviewed information, and whether guidelines in the AFCEE QAPP were met.

VOC SDG 33366

General

This SDG consisted of three (3) samples, including two (2) confirmation environmental soil samples and one trip blank sample. The samples were collected on August 22, 2000 and analyzed for volatile organic compounds (VOCs).

VOC analyses were performed using United States Environmental Protection Agency (USEPA) SW846 Method 8260B. All samples for this SDG were analyzed following the procedures outlined in the AFCEE QAPP. All samples collected were prepared and analyzed within the holding times required by the method.

Accuracy

Accuracy was evaluated using the %R results for the MS/MSD samples; LCS samples; and surrogate spikes. Sample B-10-DA-BOTTOM 1 was selected by APPL as the MS/MSD sample in this SDG.

Some of the MS/MSD %Rs were outside acceptance criteria as follows:

Sample B-10-DA-BOTTOM 1

Analyte	MS %R	MSD %R	QC
1,1,2,2-tetrachloroethane	(66.0)	60.4	64-135
1,2,3-trichlorobenzene	30.2	28.3	65-147
1,2,4-trichlorobenzene	32.1	30.2	65-145
1,2,4-trimethylbenzene	58.5	56.6	65-135
1,2-DCB	45.3	43.4	65-135
1,2-EDB	(66.0)	62.3	65-135
1,3,5-trimethylbenzene	(62.3)	60.4	62-135
1,3-DCB	47.2	45.3	65-135
1,4-DCB	45.3	43.4	65-135
1-chlorohexane	60.4	58.5	65-135
2-chlorotoluene	58.5	56.6	63-135
4-chlorotoluene	56.6	54.7	64-135
Bromobenzene	56.6	50.9	65-135

Sample B-10-DA-BOTTOM 1 Continued

Analyte	MS %R	MSD %R	QC
Bromodichloromethane	(67.9)	64.2	65-135
Bromoform	64.2	58.5	65-135
Bromomethane	60.4	58.5	62-135
Chlorobenzene	60.4	58.5	65-135
Cis-1,3-dichloropropene	49.1	47.2	64-135
Ethylbenzene	(66.0)	64.2	65-135
Hexachlorobutadiene	34.0	34.0	65-135
Isopropylbenzene	(66.0)	64.2	65-135
m&p-xylene	57.5	56.6	65-135
n-butylbenzene	47.2	47.2	65-135
n-propylbenzene	62.3	60.4	65-135
Naphthalene	35.8	35.8	65-135
o-xylene	(66.0)	64.2	65-135
p-isopropyltoluene	54.7	54.7	65-135
sec-butylbenzene	60.4	58.5	65-135
Styrene	50.9	49.1	65-135
Tert-butylbenzene	62.3	60.4	65-135
Trans-1,3-dichloropropene	54.7	50.9	56-135

() The %R was compliant.

The results for the non-compliant analytes in the associated samples from the same site with similar matrix as the MS/MSD sample were flagged “M” to indicate a matrix effect was present.

All LCS and surrogate %Rs were within acceptance criteria.

Precision

Precision was evaluated using the Relative Percent Difference (RPD) results obtained from MS/MSD results; and the field duplicate analyte values. Sample B-10-DA-BOTTOM 1 was selected by APPL as the MS/MSD sample in this SDG. There were no field duplicates analyzed in this SDG.

All MS/MSD RPDs were within acceptance criteria.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All results were considered usable. The completeness for this SDG is 100.0% compared to the minimum acceptance limit of 90%.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the chain-of-custody procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining field and laboratory blanks for cross contamination of samples during collection or analysis.

All samples in this SDG were analyzed following chain-of-custody (COC) and analytical procedures described in the AFCEE QAPP. All samples were prepared and analyzed with the holding times required for the analysis.

- All instrument performance check criteria were met.
- All initial calibration criteria were met. Mean RSD for all analytes $\leq 15\%$ with no individual analyte RSD $\geq 30\%$.
- All second source verification criteria were met.
- All internal standard criteria were met for the continuing calibrations. Sample B-10-DA-BOTTOM 1 and B-10-NE1 had below the QC limit recovery of internal standard, 1,4-dichlorobenzene-D. APPL reanalyzed both samples. All reanalysis data for target analytes agreed with the original runs. The SW846 Method 8260B (section 7.4.7) specifies that the continuing calibration internal standard areas be compared to the initial calibration internal standard data. However, there is no mention of checking the samples internal standard areas. Therefore no action was taken for the samples with non-compliant internal standards.

There were two method blanks and one trip blank associated with the VOC analyses in this SDG. The blanks were free of VOCs above the RL.

TCLP VOC SDG 33366

General

This SDG consisted of three (3) confirmation environmental soil samples. The samples were collected on August 22, 2000 and analyzed for TCLP - volatile organic compounds (VOCs).

The TCLP extractions were performed using United States Environmental Protection Agency (USEPA) SW846 Method 1311. VOC analyses were performed using USEPA SW846 Method 8260B. All samples for this SDG were analyzed following the procedures outlined in the AFCEE QAPP. All samples collected were prepared and analyzed within the holding times required by the method.

Accuracy

Accuracy was evaluated using the %R results for the MS/MSD samples; LCS sample; and surrogate spikes. Sample B-10-DA-SE 1 was used as the MS/MSD sample for this SDG.

Most of the MS/MSD %Rs were within acceptance criteria except for as follows:

Sample B-10-DA-SE 1

Analyte	MSD %R	QC
naphthalene	127	75-125

Most of the LCS %Rs were within acceptance criteria except:

LCS (TCLP)

Analyte	LCS %R	QC
naphthalene	127	75-125

No flag was applied since (1) the %R of this compound in the MSD was similar to the %R in the LCS (TCLP), matrix effect was not clearly indicated and (2) there was no positive result for naphthalene in the associated samples.

The surrogate %Rs were within acceptance criteria.

Precision

Precision was evaluated using the Relative Percent Difference (RPD) results obtained from MS/MSD results; and the field duplicate analyte values. Sample B-10-DA-SE 1 was used as the MS/MSD sample for this SDG. There were no field duplicates analyzed in this SDG.

All MS/MSD RPDs were within acceptance criteria.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All results were considered usable. The completeness for this SDG is 100.0% compared to the minimum acceptance limit of 90%.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the chain-of-custody procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining laboratory blank for cross contamination of samples during the analysis.

All samples in this SDG were analyzed following chain-of-custody (COC) and analytical procedures described in the AFCEE QAPP. All samples were prepared and analyzed with the holding times required for the analysis.

- All instrument performance check criteria were met.
- All initial calibration criteria were met.
- All continuing calibration criteria were met.
- All second source verification criteria were met.
- All internal standard criteria were met.

There was one TCLP-method blank associated with the TCLP - VOC analyses in this SDG. The TCLP-method blank contained the following:

Blank ID	Analyte	Concentration
000825BC-BLK WC	methylene chloride	1.3 µg/L

The positive methylene chloride result in the associated TCLP samples was flagged “B” to indicate that there was blank contamination in the associated method blank.

TCLP METALS SDG 33366

General

This SDG consisted of three (3) confirmation environmental soil samples. The samples were collected on August 22, 2000 and analyzed for TCLP metals; barium, beryllium, chromium, copper, nickel, zinc, tin, selenium, and silver.

The TCLP extractions were performed using United States Environmental Protection Agency (USEPA) SW846 Method 1311. The barium, beryllium, chromium, copper, nickel, zinc, tin, selenium, and silver analyses were performed using USEPA SW846 Method 6010B. All samples for this SDG were analyzed following the procedures outlined in the AFCEE QAPP. All samples collected were prepared and analyzed within the holding times required by the method.

Accuracy

Accuracy is normally evaluated using the %R results for the MS/MSD samples and LCS samples. There was no MS/MSD analysis in this SDG.

The LCS %Rs were within acceptance criteria.

Precision

Precision is normally evaluated using the Relative Percent Difference (RPD) results obtained from MS/MSD results; and the field duplicate analyte values. There was no MS/MSD or field duplicate analysis in this SDG.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All results were considered usable. The completeness for this SDG is 100% compared to the minimum acceptance limit of 90%.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the chain-of-custody procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and

- Examining laboratory blanks for cross contamination of samples during the analysis.

All samples in this SDG were analyzed following the chain-of-custody (COC) and analytical procedures described in the AFCEE QAPP. All samples were prepared and analyzed with the holding times required for the analysis.

- All initial and continuing calibration criteria were met.
- All second source calibration criteria were met.
- All interference check criteria were met.
- Most of the dilution test criteria were met except for as follows:

Sample B-10-BOTTOM 1

Analyte	%D	QC
barium	11.1	10

Barium result of all associated samples was flagged with “J”. The beryllium, chromium, copper, nickel, tin, selenium, and silver result for the sample were less than the reporting limit; therefore, the dilution test was not required for these analytes.

- All post digestion spike addition criteria were met.

There was one TCLP-method blank and several calibration blanks associated with the metal analyses in this SDG. The calibration blanks were free of any TCLP metals of concern above the reporting limit. The TCLP-method blank contained 0.0474 mg/L of barium and 0.0057 mg/L of tin. All positive barium sample results were flagged with “B”. The tin result in sample B-10-DA-TOP 1 was flagged “B” to indicate tin was present in the associated method blank.

TCLP MERCURY SDG 33366

General

This SDG consisted of three (3) confirmation environmental soil samples. The samples were collected on August 22, 2000 and analyzed for mercury.

The TCLP extractions were performed using United States Environmental Protection Agency (USEPA) SW846 Method 1311. The mercury analyses were performed using USEPA SW846 Method 7470A. All samples for this SDG were analyzed following the procedures outlined in the AFCEE QAPP. All samples collected were prepared and analyzed within the holding times required by the method.

Accuracy

Accuracy is normally evaluated using the %R results for the MS/MSD samples and LCS samples. There was no MS/MSD analysis in this SDG.

All LCS %R was within acceptance criteria.

Precision

Precision is normally evaluated using the Relative Percent Difference (RPD) results obtained from MS/MSD results; and the field duplicate analyte values. There was no MS/MSD or field duplicate analysis in this SDG.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All results were considered usable. The completeness for this SDG is 100% compared to the minimum acceptance limit of 90%.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the chain-of-custody procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during the analysis.

All samples in this SDG were analyzed following the chain-of-custody (COC) and analytical procedures described in the AFCEE QAPP. All samples were prepared and analyzed with the holding times required for the analysis.

- All initial and continuing calibration criteria were met.
- All second source calibration criteria were met.

There was one method blank and several calibration blanks associated with the mercury analyses in this SDG. All blanks were free of any mercury above the RL.

TCLP ARSENIC SDG 33366

General

This SDG consisted of three (3) confirmation environmental soil samples. The samples were collected on August 22, 2000 and analyzed for arsenic.

The TCLP extractions were performed using United States Environmental Protection Agency (USEPA) SW846 Method 1311. The arsenic analyses were performed using USEPA SW846 Method 7060A. All samples for this SDG were analyzed following the procedures outlined in the AFCEE QAPP. All samples collected were prepared and analyzed within the holding times required by the method.

Accuracy

Accuracy is normally evaluated using the %R results for the MS/MSD samples and LCS samples. There was no MS/MSD analysis for this SDG.

The LCS %R was within acceptance criteria.

Precision

Precision is normally evaluated using the Relative Percent Difference (RPD) results obtained from MS/MSD results; and the field duplicate analyte values. There was no MS/MSD or field duplicate analysis in this SDG.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All results were considered usable. The completeness for this SDG is 100% compared to the minimum acceptance limit of 90%.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the chain-of-custody procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during the analysis.

All samples in this SDG were analyzed following chain-of-custody (COC) and analytical procedures described in the AFCEE QAPP. All samples were prepared and analyzed with the holding times required for the analysis. In the BLD43 samples, arsenic was not detected in the undiluted samples but was seen in the 1/5 dilution. The 1/10 dilution confirmed the presence of arsenic.

- All initial and continuing calibration criteria were met.
- All second source calibration criteria were met.
- The arsenic result for the diluted sample chosen for the dilution test was non-detect. The dilution test was not required.
- The recovery test criteria were met.

There was one method blank and several calibration blanks associated with the arsenic analyses in this SDG. All blanks were free of any arsenic above the RL.

TCLP CADMIUM SDG 33366

General

This SDG consisted of three (3) confirmation environmental soil samples. The samples were collected August 22, 2000 and analyzed for cadmium.

The TCLP extractions were performed using United States Environmental Protection Agency (USEPA) SW846 Method 1311. The cadmium analyses were performed using USEPA SW846 Method 7131. All samples for this SDG were analyzed following the procedures outlined in the AFCEE QAPP. All samples collected were prepared and analyzed within the holding times required by the method.

Accuracy

Accuracy is normally evaluated using the %R results for the MS/MSD samples and LCS samples. There was no MS/MSD analysis for this SDG.

The LCS %R was outside acceptance criteria as follows:

LCS 000825A

Analyte	%R	QC
cadmium	120.7	80-120

The positive cadmium result of sample B-10-DA-BOTTOM-1 was considered estimated and flagged "J".

Precision

Precision is normally evaluated using the Relative Percent Difference (RPD) results obtained from MS/MSD results; and the field duplicate analyte values. There was no MS/MSD or field duplicate analysis in this SDG.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All results were considered usable. The completeness for this SDG is 100% compared to the minimum acceptance limit of 90%.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the chain-of-custody procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during the analysis.

All samples in this SDG were analyzed following chain-of-custody (COC) and analytical procedures described in the AFCEE QAPP. All samples were prepared and analyzed with the holding times required for the analysis.

- All initial and continuing calibration criteria were met.
- All second source calibration criteria were met.
- The cadmium result for the sample chosen for the dilution test was less than 25 times the MDL. Therefore, the dilution test results were not applicable.
- All recovery test criteria were met.

There was one method blank and several calibration blanks associated with the cadmium analyses in this SDG. All blanks were free of any cadmium above the RL.

TCLP LEAD SDG 33366

General

This SDG consisted of three (3) confirmation environmental soil samples. The samples were collected on August 22, 2000 and analyzed for TCLP - lead.

The TCLP extractions were performed using United States Environmental Protection Agency (USEPA) SW846 Method 1311. The lead analyses were performed using USEPA SW846 Method 7421. All samples for this SDG were analyzed following the procedures outlined in the AFCEE QAPP. All samples collected were prepared and analyzed within the holding times required by the method.

Accuracy

Accuracy is normally evaluated using the %R results for the MS/MSD samples and LCS samples. There was no MS/MSD analysis in this SDG.

The LCS %R was within acceptance criteria.

Precision

Precision is normally evaluated using the Relative Percent Difference (RPD) results obtained from MS/MSD results; and the field duplicate analyte values. There was no MS/MSD or field duplicate analysis in this SDG.

Completeness

Completeness has been evaluated by comparing the total number of samples collected with the total number of samples with valid analytical data.

All results were considered usable. The completeness for this SDG is 100% compared to the minimum acceptance limit of 90%.

Representativeness

Representativeness expresses the degree to which sample data accurately and precisely represents actual site conditions. Representativeness has been evaluated by:

- Comparing the chain-of-custody procedures to those described in the AFCEE QAPP;
- Comparing actual analytical procedures to those described in the AFCEE QAPP;
- Evaluating holding times; and
- Examining laboratory blanks for cross contamination of samples during the analysis.

All samples in this SDG were analyzed following the chain-of-custody (COC) and analytical procedures described in the AFCEE QAPP. All samples were prepared and analyzed with the holding times required for the analysis.

- All initial and continuing calibration criteria were met.
- All second source calibration criteria were met.
- The dilution test was not applicable.
- All recovery test criteria were met.

There was one method blank and several calibration blanks associated with the lead analyses in this SDG. All blanks were free of any lead above the RL.